

WHAT IS CLAIMED IS:

1. A current sensor using a magnetic detection device having a magnetic body adapted to allow high frequency currents to directly flow through it and
5 change its magnetic permeability in response to the external magnetic field, said sensor comprising:

parallel electric wire sections of a pair of electric wires arranged in parallel with each other and adapted to flow respective electric currents of
10 the same intensity in directions opposite to each other; and

said magnetic detection device arranged on a prolonged line connecting the center axes of said parallel electric wire sections,

15 wherein said magnetic detection device has a magnetic field detecting direction rectangular relative to the prolonged line and is adapted to detect the difference between the magnetic field formed by the parallel electric wire section located
20 close to the magnetic detection device and the magnetic field formed by the parallel electric wire section located remote from the magnetic detection device and directed oppositely relative to the former magnetic field in order to detect the intensity of
25 the electric currents flowing through said parallel electric wire sections.

2. A sensor according to claim 1, wherein
the magnetic field applied to said magnetic
detection device is within a range of ± 15 mT relative
to the largest current value to be metered.

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3. A sensor according to claim 1, wherein
the parallel electric wire section located close
to said magnetic detection device and the parallel
electric wire section located remote from said
10 magnetic detection device are coupled at respective
one ends thereof within the sensor.

4. A sensor according to claim 1, wherein
the parallel electric wire section located close
15 to said magnetic detection device and the parallel
electric wire section located remote from said
magnetic detection device are connected to each other
at respective one ends by way of a U-shaped electric
wire section.

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5. A sensor according to claim 1, wherein
said parallel electric wire sections have an
oblong rectangular cross section extending in the
magnetic field detecting direction of said magnetic
25 detection device and the width of the cross section
as viewed in the longitudinal direction is greater
than the length of the detecting section of the

device.

6. A sensor according to claim 5, wherein
the gap d separating said parallel electric wire
5 sections is smaller than the distance s separating
the parallel electric wire section located close to
said magnetic detection device and said magnetic
detection device.

10 7. A sensor according to claim 6, further
comprising:

a magnetic shield surrounding said parallel
electric wire sections and said magnetic detection
device with the inner wall surface of said magnetic
15 shield separated from said parallel electric wire
sections by a distance greater than $d + s$.

8. A current detection unit comprising:
a current sensor including:
20 parallel electric wire sections of a pair of
electric wires arranged in parallel with each other
and adapted to flow respective electric currents of
the same intensity in directions opposite to each
other; and

25 a magnetic detection device having a magnetic
body adapted to allow high frequency currents to
directly flow through it and change its magnetic

permeability in response to the external magnetic field,

5 said magnetic detection device having a magnetic field detecting direction rectangular relative to a prolonged line and being adapted to detect the difference between the magnetic field formed by the parallel electric wire section located close to the magnetic detection device and the magnetic field formed by the parallel electric wire section located
10 remote from the magnetic detection device and directed oppositely relative to the former magnetic field in order to detect the intensity of the electric currents flowing through said parallel electric wire sections;

15 a circuit substrate carrying said magnetic detection device and said parallel electric wire sections thereon,

20 said circuit substrate being provided at a part thereof with a through hole or notch, free ends of said parallel electric wire sections being exposed to the outside through said through hole or notch; and

25 a detection circuit arranged on said circuit substrate to detect the output of the current detection unit by way of said magnetic detection device.

9. A unit according to claim 8, wherein

said detection circuit detects the change in the impedance at the opposite ends of the magnetic body of said magnetic detection device.

5 10. A unit according to claim 8, further comprising:

 a coil arranged close to said magnetic detection device, said detection circuit being adapted to detect the change in the voltage produced in said
10 coil.

 11. A unit according to claim 8, further comprising:

 a magnetic shield member surrounding said
15 current sensor and said circuit substrate.

 12. A unit according to claim 11, wherein
 the gap separating said parallel electric wire sections in said magnetic shield member and the gap
20 separating said parallel electric wire sections projecting from said magnetic shield member differ from each other.